Chapter One
PROJECT BACKGROUND AND PURPOSE AND NEED FOR THE ACTION

This Chapter provides background information on the Federal Aviation Administration's (FAA) proposal to reconfigure the airspace system in the Cleveland and Detroit Metropolitan areas and beyond in high-altitude en route center airspace. Termed the Midwest Airspace Enhancement (MASE) project, the FAA's proposal includes airspace redesign and associated air traffic control (ATC) procedure changes.

The purpose of this Environmental Assessment (EA) is to evaluate the environmental effects of the MASE project in accordance with the National Environmental Policy Act (NEPA).[1]

1.1 INTRODUCTION

The Federal Aviation Act of 1958 delegates to the FAA responsibility for managing use of the navigable airspace and regulating civil and military aircraft operations in that airspace in the interest of maintaining both the safety and efficiency of operations.[2] In its effort to continually enhance safety and improve the efficiency of the airspace, the FAA is proposing modifications to airspace and ATC procedures used in the airspace above and beyond the Cleveland and Detroit Metropolitan Areas.

The en route airspace located above the Cleveland and Detroit Metropolitan Areas (i.e., airspace generally above 12,000 and 13,000 feet MSL, respectively) is the busiest in the United States due to the number of aircraft traversing the area on intercontinental routes (i.e., to/from the east and west coasts), as well as a number of routes to and from southern destinations. As there are interactions and interdependencies between aircraft operating in the en route environment with those in the terminal radar approach control (TRACON) environment (in which aircraft are being routed for landing or after takeoff) the efficient flow of aircraft operating between these two airspace environments is integral to the overall smooth operation of the national airspace system (NAS).

Therefore, as a regionally integrated approach for considering potential improvements to the regional airspace system, MASE was conceived as a system to more efficiently manage aircraft flying under Instrument Flight Rules (IFR) in the airspace above and beyond the Cleveland and Detroit Metropolitan Areas. IFR refers to procedures used by pilots and ATC during instrument meteorological conditions (e.g., rain, low clouds, and/or reduced visibility that results in cloud ceilings of less than 1,000 feet AGL or visibility less than three statute miles). Aircraft with an IFR flight plan are provided with positive control (i.e., separation of all air traffic within controlled airspace using specific separation criteria) by ATC, which is primarily responsible for aircraft separation.

An important aspect of MASE is how aircraft would be managed between the Detroit (D21) and Cleveland (CLE) TRACON airspace environments and the higher-altitude en route airspace environment. Recent runway construction projects at Detroit Metropolitan Wayne County (DTW) and Cleveland Hopkins International (CLE) airports provide for enhanced runway capacity. The MASE project seeks to accommodate the additional airport throughput afforded by the runway construction projects by establishing some new ingress and egress fixes and routes at the lateral boundaries of the D21 and CLE TRACON airspace areas. These lateral boundaries are located approximately 40 and 50 nautical miles, respectively, from each airport. Note that the MASE project would not change the basic aircraft flight patterns in the immediate vicinity of any airport.

Also, a number of multi-center design issues in the high-altitude stratum would be addressed in order to allow for greater flexibility and efficiency in the high-altitude airspace structure. The high-altitude en route airspace changes are needed to reduce congestion and delay in center airspace largely east of the Mississippi River. This congestion and delay arises when high air traffic volumes are routed via complex air traffic flows. The high-altitude multi-center reroutes would support the proposed low-altitude TRACON airspace changes at D21 and CLE. Importantly, the high-altitude multi-center reroutes would also enhance ATC's capabilities to facilitate operational improvements throughout the high-altitude airspace environment encompassing a total of 10 en route centers.

The focuses and driving factors behind the purpose and need of this MASE project are the CLE and D21 TRACON airspace design issues, along with the high-altitude multi-center reroute issues affecting terminal and en route flows and congestion.

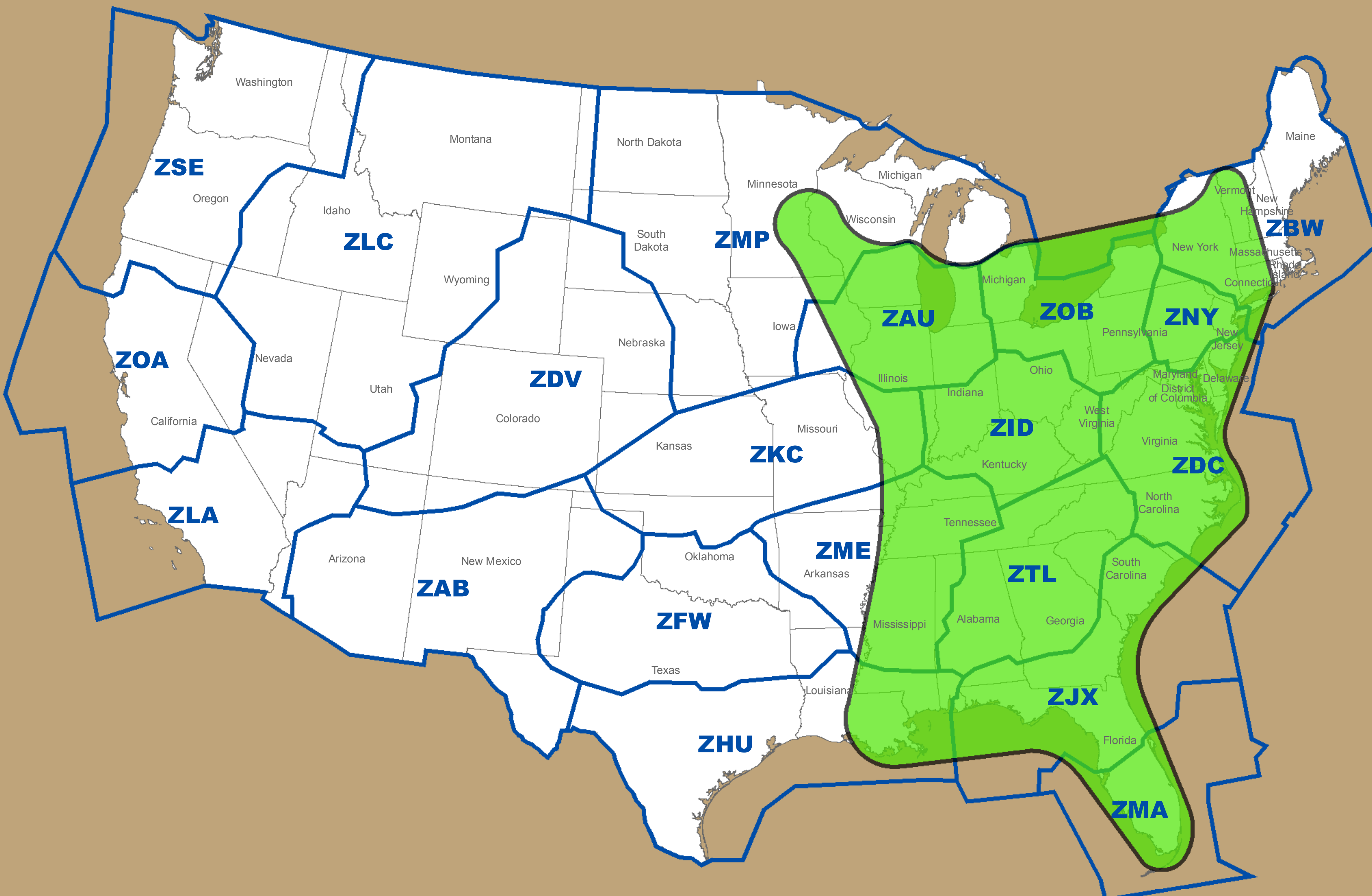
Before proceeding with the discussion on purpose and need, it is necessary to define the airspace redesign study areas for two distinct purposes in the following manner:

- MASE High-Altitude Airspace Redesign Study Area
- MASE Airspace Redesign Environmental Study Area

The overall MASE High-Altitude Airspace Redesign Study Area encompasses the high-altitude center reroute procedures and covers a large portion of airspace from the upper Midwest to Boston and south to Miami; thus covering a large swath of airspace that is east of the Mississippi River as shown in **Figure 1-1**. The MASE High-Altitude Airspace Redesign Study Area is used to describe and disclose the high-altitude airspace changes that were not evaluated for changes in noise exposure and other environmental impacts. FAA Order 1050.1E, "Environmental Impacts: Policies and Procedures," provides for the use of noise modeling using the Noise Integrated Routing System (NIRS) for certain airspace actions, and establishes change-of-exposure criteria to be used to determine noise impacts resulting from airspace changes from ground level to 10,000 feet above ground level (AGL).[3] The FAA has determined that airspace changes above 10,000 feet AGL do not, individually or cumulatively, have a significant effect on the human environment.[4] These actions are normally categorically excluded.[5] For these reasons, the FAA has focused the analysis of noise and other environmental impacts in this EA on the area within the MASE Airspace Redesign Environmental Study Area. The high-altitude airspace redesign changes are described in **Appendix C**.

The general area for describing MASE high-altitude airspace redesign changes must be

Midwest Airspace Enhancement EA
Figure 1-1 : High-Altitude Airspace Redesign Study Area



differentiated from the smaller MASE Airspace Redesign Environmental Study Area, which is shown in **Figure 1-2**. The difference between these two study area definitions results from the requirements set forth in FAA Order 1050.1E. The MASE Airspace Redesign Environmental Study Area is comprised of two 50 nautical mile radius circles around each primary airport (i.e., DTW and CLE) that are connected by parallel lines to form a "racetrack" or "pill" shaped airspace boundary oriented northwest to southeast. The MASE Airspace Redesign Environmental Study Area also has a vertical component. The altitude ceiling for environmental considerations regarding airspace studies is 10,000 feet AGL.[6] Given terrain in the study area, a conservative 12,000 feet mean sea level (MSL) altitude was used as the MASE Airspace Redesign Environmental Study Area ceiling.

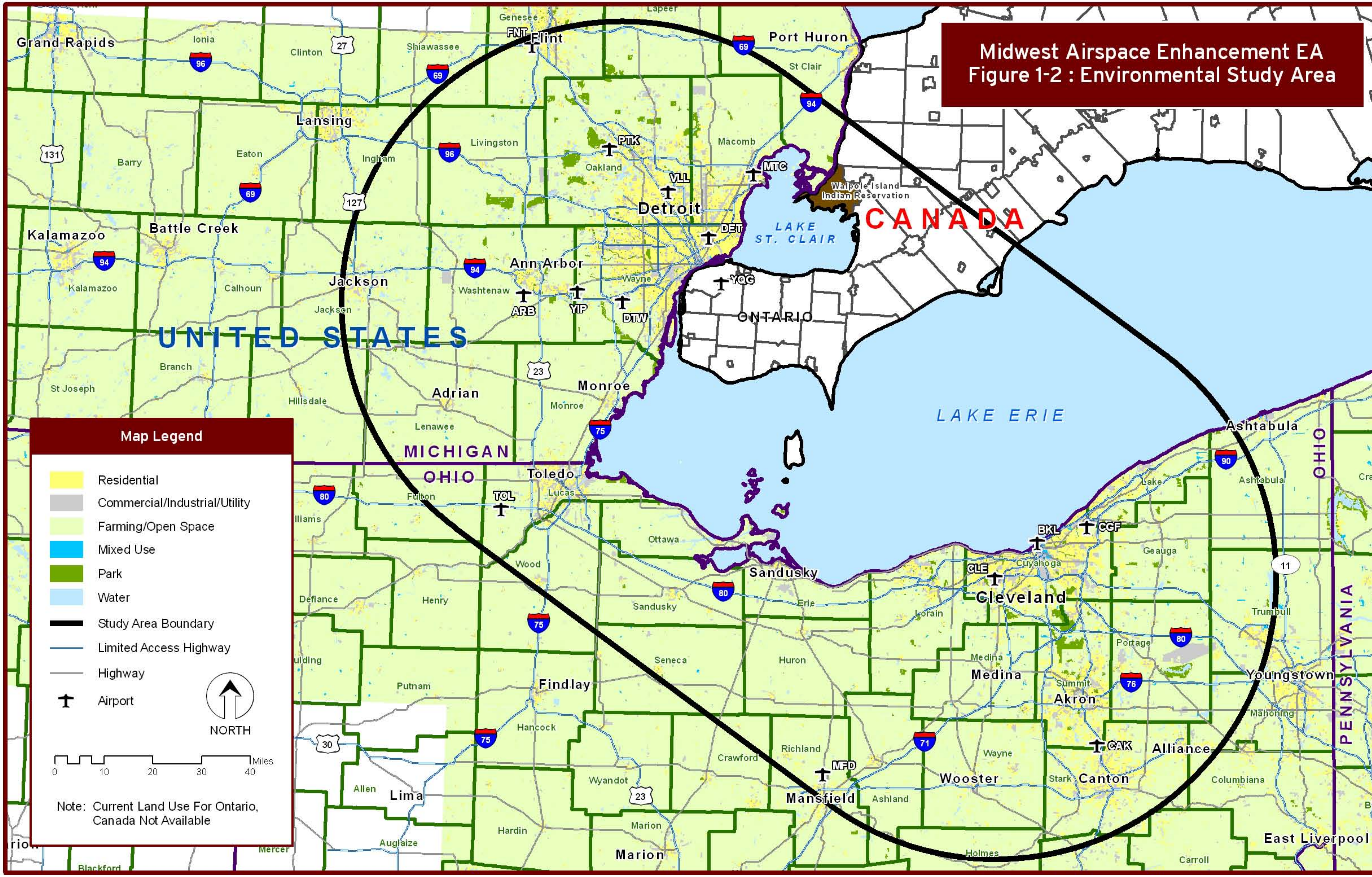
East of the Mississippi River, the MASE project includes changes to 158 routes in the primarily high-altitude en route airspace, many of which join lower altitude TRACON routes within the MASE Airspace Redesign Environmental Study Area as described in the following two paragraphs.

Forty-nine of the 158 high-altitude route changes (i.e., about 31%) are for aircraft that fly through high-altitude airspace on intercontinental or north-south routes (i.e., primarily to/from Florida), and do not takeoff or land at airports within the MASE Airspace Redesign Environmental Study Area. These changes are in the high-altitude en route airspace that, from an overall route perspective, is partially managed by the Cleveland and Indianapolis Centers. In effect, these are new preferential high-altitude routes to mitigate congestion and delay and decrease flying distances between certain cities. While these routing changes would affect procedures in Cleveland and Indianapolis Centers, they would also affect procedures in the Chicago, New York, Boston, Washington, Memphis, Minneapolis, Kansas City, Atlanta, Jacksonville, and Miami Centers along with routes interfacing with Canadian airspace.

One hundred and nine (109) of the 158 high-altitude route changes (i.e., about 69%) involve routes serving airports within and between the Cleveland and Detroit Metropolitan areas. These changes would affect D21 and CLE TRACON airspace and en route airspace managed by Cleveland and Indianapolis Centers. These Centers have primary responsibility for coordinating with the D21 and CLE TRACON facilities to transition traffic between the en route and terminal airspace environments. The MASE route changes would provide for a seamless connection between the terminal and en route airspace environments and thus improve the efficiency of aircraft operations given the interdependencies between these ATC facilities.

Under FAA policy in FAA Order 1050.1E, the 109 D21 and CLE TRACON airspace changes in the MASE project are the primary focus of noise modeling and environmental impacts analyses in this EA as the proposed changes involve air traffic actions at and below an altitude of 10,000 feet AGL.[7] While part of the MASE airspace redesign, the 49 proposed route changes that are only in the high-altitude en route airspace are not directly applicable to airports within and between the Cleveland and Detroit Metropolitan areas; these route changes are above the 10,000 feet AGL noise analysis threshold established by FAA Order 1050.1E.[8]

Detailed analysis of how the MASE high-altitude multi-center reroutes are integrated into the terminal environment is addressed



Midwest Airspace Enhancement EA
Figure 1-2 : Environmental Study Area

in Chapter 2, Alternatives. Also, Section 1.2.1 provides background information on the ATC system, while **Appendix C** describes each of the 158 MASE high-altitude airspace redesign multi-center re-routes.

The proposed MASE project would more efficiently manage IFR aircraft flying to and from major airports in the Cleveland and Detroit Metropolitan areas. The primary airports in the region include CLE in northeast Ohio and DTW in southeast Michigan. As shown in **Tables 1-1 and 1-2**, a total of fifteen airports are included in the modeling for the airspace redesign. The fifteen airports have an average of 10 or more daily IFR operations and thus could be affected by the proposed changes as discussed in Section 1.2.3.

Table 1-1

Public-Use Airports within a 50 Nautical Mile Radius of Cleveland Hopkins International Airport

Airport/Facility Location		Satellite Airports	Ident-ifier	Distance & True Course (Nm/°) From CLE		ATCT	Instrument Approach Procedure	IAP Service Facility
Modeled Airports: Shaded Airports have significant IFR traffic and are included in the noise modeling (See Section 1.2.3)								
Cleveland	**OH**	**Cleveland Hopkins Airport**	**CLE**	**0**	**NA**	**CLE**	**YES**	**CLE**
Columbia	OH	Columbia Station Airport	4G8	7.5	222°	NA	NA	NA
Cleveland	**OH**	**Burke Lakefront Airport**	**BKL**	**9.8**	**050°**	**BKL**	**YES**	**CLE**
Elyria	OH	Elyria Airport	1G1	12.3	247°	NA	YES	CLE
Lorain/Elyria	OH	Lorain County Regional Airport *	LPR	15.3	255°	NA	YES	CLE
Medina	OH	Medina Municipal Airport *	1G5	17.3	167°	NA	YES	CLE
Akron	OH	Schmeltzer Heliport	6D5	18.0	152°	NA	NA	NA
Lagrange	OH	Harlan Airfield	92D	18.1	078°	NA	NA	NA
Cleveland	**OH**	**Cuyahoga County Airport**	**CGF**	**18.8**	**060°**	**CGF**	**YES**	**CLE**
Akron	OH	Old Portage Heliport	4P2	21.3	140°	NA	NA	NA
Wellington	OH	Reader-Botsford Airport	67D	21.9	227°	NA	NA	NA
Wadsworth	OH	Weltzein Skypark	15G	23.1	174°	NA	NA	NA
Wakeman	OH	Wakeman Airport	I64	24.5	253°	NA	NA	NA
Wadsworth	OH	Wadsworth Municipal Airport	3G3	24.9	170°	NA	YES	CAK
Kent	OH	Kent State University Airport	1G3	25.0	128°	NA	YES	CAK
Willoughby	OH	Willoughby Lost Nation Municipal Airport	LNN	26.4	052°	NA	YES	CLE
Akron	OH	Akron Fulton International Airport	AKR	28.4	142°	NA	YES	CAK
Mantua	OH	Mills Airport	7E3	28.8	111°	NA	NA	NA
Ravenna	OH	Portage County Airport	29G	29.6	114°	NA	YES	CAK
Akron	OH	Mayfield Airport	1D4	31.5	143°	NA	NA	NA
Hiram	OH	Far View Airport	86D	31.9	102°	NA	NA	NA
Wooster	OH	Wayne County Airport	BJJ	32.3	183°	NA	YES	CAK
Freedom	OH	Freedom Air Field	7D6	32.5	109°	NA	NA	NA
Painesville	OH	Concord Airpark	2G1	33.1	062°	NA	YES	CLE
Norwalk	OH	Norwalk-Huron County Airport	5A1	33.2	253°	NA	YES	MFD
Huron	OH	Hinde Airport	88D	33.9	269°	NA	NA	NA
Garrettsville	OH	Gates Airport	7D8	34.0	096°	NA	NA	NA
Akron	**OH**	**Akron-Canton Regional Airport**	**CAK**	**35.0**	**148°**	**CAK**	**YES**	**CAK**
Middlefield	OH	Geauga County Airport	7G8	35.5	086°	NA	YES	CLE
Ashland	OH	Ashland County Airport	3G4	35.6	211°	NA	YES	CLE
Sandusky	OH	Griffing Sandusky Airport	SKY	36.2	272°	NA	YES	ZOB
Kellys Island	OH	Kellys Island Land Field	89D	39.3	287°	NA	NA	NA
Canton	OH	Stark County Sheriff Heliport	5D1	42.2	144°	NA	NA	NA
Warren	OH	Warren Airport	62D	42.5	101°	NA	NA	NA
Pelee Island	ON	Pelee Island Airport	CYPT	42.9	301°	NA	YES	CLE
Alliance	OH	Barber Airport	2D1	43.0	128°	NA	NA	NA
Alliance	OH	Miller Airport	4G3	44.7	125°	NA	YES	CAK
Orwell	OH	Champion Executive Airport	9B9	45.3	081°	NA	NA	NA

Table 1-1

Public-Use Airports within a 50 Nautical Mile Radius of Cleveland Hopkins International Airport

Airport/Facility Location		Satellite Airports	Ident-ifier	Distance & True Course (Nm/°) From CLE		ATCT	Instrument Approach Procedure	IAP Service Facility
Modeled Airports: Shaded Airports have significant IFR traffic and are included in the noise modeling (See Section 1.2.3)								
Willard	OH	Willard Airport	8G1	45.4	241°	NA	YES	MFD
Middle Bass Island	OH	Middle Bass-East Point Airport	3W9	45.8	292°	NA	NA	NA
Middle Bass	OH	Middle Bass Island Airport	2T7	46.0	291°	NA	NA	NA
Put In Bay	OH	Put In Bay Airport	3W2	46.0	287°	NA	NA	NA
Port Clinton	OH	Carl R Keller Field	PCW	46.3	278°	NA	YES	ZOB
Mansfield	**OH**	**Mansfield Lahm Regional Airport**	**MFD**	**46.6**	**221°**	**MFD**	**YES**	**MFD**
North Bass Island	OH	North Bass Island Airport	3X5	47.4	293°	NA	NA	NA
Geneva	OH	Germack Airport	7D9	47.8	062°	NA	NA	NA
Beach City	OH	Beach City Airport	2D7	47.8	164°	NA	YES	CAK
Sebring	OH	Tri-City Airport	3G6	49.0	128°	NA	YES	CAK

Sources: AirNav.com website (www.airnav.com) and Aircraft Owners and Pilots Association (AOPA) website (www.aopa.org)

Table 1-2

Public-Use Airports within a 50 Nautical Mile Radius of Detroit Metropolitan Wayne County Airport

Airport/Facility Location		Satellite Airports	Ident-ifier	Distance & True Course (Nm/°) From DTW		ATCT	Instrument Approach Procedure	IAP Service Facility
Modeled Airports: Shaded Airports have significant IFR traffic and are included in the noise modeling (See Section 1.2.3)								
Detroit	**MI**	**Detroit Metropolitan Wayne County Airport**	**DTW**	**0**	**NA**	**DTW**	**YES**	**D21**
Detroit	**MI**	**Willow Run Airport**	**YIP**	**8.0**	**281°**	**YIP**	**YES**	**D21**
Belleville	MI	Larsen Air Park	43G	8.8	256°	NA	NA	NA
Plymouth	MI	Canton-Plymouth Mettetal	1D2	9.5	331°	NA	YES	D21
Det/Grosse Isle	MI	Grosse Ile Municipal Airport	ONZ	11.0	129°	NA	YES	D21
Carleton	MI	Wickenheiser Airport	W87	11.7	185°	NA	NA	NA
Detroit	MI	Cobo Hall Heliport	84G	15.2	063°	NA	NA	NA
Monroe	MI	Custer Airport	TTF	16.8	193°	NA	YES	D21
Ann Arbor	**MI**	**Ann Arbor Municipal Airport**	**ARB**	**17.5**	**272°**	**ARB**	**YES**	**D21**
Windsor	**ON**	**Windsor Airport**	**CYQG**	**18.1**	**078°**	**YQG**	**YES**	**D21**
Detroit	**MI**	**Detroit City Airport**	**DET**	**19.3**	**052°**	**DET**	**YES**	**D21**
Saline	MI	Saline Airport	2C3	19.9	259°	NA	NA	NA
New Hudson	MI	Oakland Southwest Airport	Y47	21.2	326°	NA	YES	D21
Troy	**MI**	**Oakland/Troy Airport**	**VLL**	**21.3**	**021°**	**NA**	**YES**	**D21**
Petersburg	MI	Gradolph Field	88G	24.5	224°	NA	NA	NA
Dexter	MI	Cackleberry Airport	2E8	26.2	299°	NA	NA	NA
Erie	MI	Erie Aerodrome	M84	26.8	196°	NA	NA	NA
Pontiac	**MI**	**Oakland County International Airport**	**PTK**	**27.3**	**354°**	**PTK**	**YES**	**D21**
Tecumseh	MI	Meyers-Diver's Airport	3TE	28.4	247°	NA	YES	D21
Brighton	MI	Brighton Airport	45G	28.6	319°	NA	NA	NA
Tecumseh	MI	Merillat Airport	34G	29.2	241°	NA	NA	NA
Clinton	MI	Honey Acres Airport	7N4	29.3	254°	NA	NA	NA
Manchester	MI	Rossettie Airport	75G	30.2	268°	NA	NA	NA
Howell	MI	Raether Airport	4Y1	30.8	314°	NA	NA	NA
Blissfield	MI	Betz Airport	44G	31.5	227°	NA	NA	NA
Lambertville	MI	Toledo Suburban Airport	DUH	31.6	205°	NA	YES	TOL
Howell	MI	Aeronut Park - Balloon	13M	32.5	317°	NA	NA	NA
Mount Clemens	**MI**	**Selfridge Air Force Base**	**MTC**	**33.0**		**MTC**	**YES**	
Gregory	MI	Carriage Lane Airport	35L	33.8	297°	NA	NA	NA
Gregory	MI	Richmond Field	69G	34.5	294°	NA	NA	NA
Toledo	OH	Seagate Helistop Heliport	6T2	34.5	193°	NA	NA	NA

Table 1-2

Public-Use Airports within a 50 Nautical Mile Radius of Detroit Metropolitan Wayne County Airport

Airport/Facility Location		Satellite Airports	Ident-ifier	Distance & True Course (Nm/°) From DTW		ATCT	Instrument Approach Procedure	IAP Service Facility
Modeled Airports: Shaded Airports have significant IFR traffic and are included in the noise modeling (See Section 1.2.3)								
Howell	MI	Livingston County Airport	OZW	37.5	312°	NA	YES	D21
Ray (New Haven)	MI	Ray Community Airport (Macomb)	57D	37.6	033°	NA	NA	NA
North Bass Island	OH	North Bass Island Airport	3X5	38.0	141°	NA	NA	NA
Adrian	MI	Lenawee County Airport	ADG	38.2	238°	NA	YES	TOL
Romeo	MI	Romeo State Airport	D98	38.9	025°	NA	YES	ZOB, Selfridge
Onsted	MI	Loars Field Inc. Airport	83G	39.1	251°	NA	NA	NA
Toledo	OH	Metcalf Field	TDZ	39.3	188°	NA	YES	TOL
Middle Bass Island	OH	Middle Bass-East Point Airport	3W9	39.8	141°	NA	NA	NA
Middle Bass	OH	Middle Bass Island Airport	3T7	40.0	142°	NA	NA	NA
Brooklyn	MI	Shamrock Field	6G8	40.1	260°	NA	NA	NA
Pelee Island	ON	Pelee Island Airport	CYPT	40.2	131°	NA	YES	CLE
Linden	MI	Prices Airport	9G2	40.2	333°	NA	YES	FNT
Napoleon	MI	Napoleon Airport	3NP	40.4	267°	NA	NA	NA
Harsens Island	MI	Harsens Island Airport	Z92	41.2	056°	NA	NA	NA
Put In Bay	OH	Put In Bay Airport	3W2	41.8	146°	NA	NA	NA
Toledo	**OH**	**Toledo Express Airport**	**TOL**	**42.7**	**209°**	**TOL**	**YES**	**TOL**
Fowlerville	MI	Maple Grove Heliport	E66	43.6	314°	NA	NA	NA
Fowlerville	MI	Maple Grove Airport	65G	43.7	314°	NA	NA	NA
Napoleon	MI	Day Field	6H4	43.8	266°	NA	NA	NA
Marine City	MI	Marine City Airport	76G	45.4	047°	NA	NA	NA
Port Clinton	OH	Carl R Keller Field	PCW	47.1	152°	NA	YES	ZOB
Kelleys Island	OH	Kellys Island - Land Field	89D	47.3	141°	NA	NA	NA
Flint	**MI**	**Bishop Intl. Airport**	**FNT**	**48.4**	**339°**	**FNT**	**YES**	**FNT**
Jackson	MI	Jackson County Reynolds Field	JXN	49.3	274°	JXN	YES	Lansing (LAN)
Davison	MI	Athelone Williams Memorial Airport	6G0	49.7	351°	NA	YES	FNT

Sources: AirNav.com website (www.airnav.com) and Aircraft Owners and Pilots Association (AOPA) website (www.aopa.org)

1.1.1 Report Organization

The format and subject matter of this EA conform to the requirements and standards of the Council on Environmental Quality (CEQ) regulations under 40 CFR Part 1500 and FAA standards as set forth in FAA Order 1050.1E. The EA has been prepared in accordance with Section 102(c) of NEPA, the Federal Aviation Act of 1958,[9] the Airport and Airway Safety and Capacity Expansion Act of 1987,[10] and other laws as applicable.

The chapter outline of the document is as follows:

- Chapter One defines the Proposed Action and the Purpose and Need for the project.

- Chapter Two evaluates reasonable alternatives for the proposed project. Although many potential component airspace alternative design scenarios were vetted for functional usability and eventual conformity to ATC procedures as outlined in FAA Order 7110.65P "Air Traffic Control," two alternatives are evaluated in this EA: (1) an airspace redesign alternative (i.e., the Proposed Action) and (2) a No Action Alternative. The Proposed Action alternative includes changes in ingress and egress routes and fixes, use of altitudes, holding patterns, and procedures in both the high-altitude multi-center en route and the lower altitude terminal area environments. The No Action Alternative is required to be included in the evaluation under NEPA.

- Chapter Three identifies the MASE Airspace Redesign Environmental Study Area and the existing affected environment.
- Chapter Four provides full disclosure of the potential environmental impacts in the MASE Airspace Redesign Environmental Study Area associated with the alternatives to the environmental resource categories, as required by federal law and regulations.
- Chapter Five discusses public and agency coordination.
- Chapter Six lists the document's preparers.
- Supporting material is provided in **Appendices A through J**.

1.2 BACKGROUND

This section provides information on the National Airspace System (NAS), including ATC facilities, and airspace redesign from national and local perspectives. Information is also provided on MASE Airspace Redesign Environmental Study Area airports and forecast aviation demand.

1.2.1 National Airspace System

FAA created the NAS to protect persons and property on the ground and to establish a safe and efficient airspace environment for civil, commercial, and military aviation. The NAS is made up of a network of air navigation facilities, ATC facilities, airports, technology, and appropriate rules and regulations that are needed to operate the system. This section presents a brief overview of the NAS as related to the air traffic management of aircraft. A more detailed synopsis of the NAS is contained in **Appendix B**.

1.2.1.1 Types of Air Traffic Control Facilities

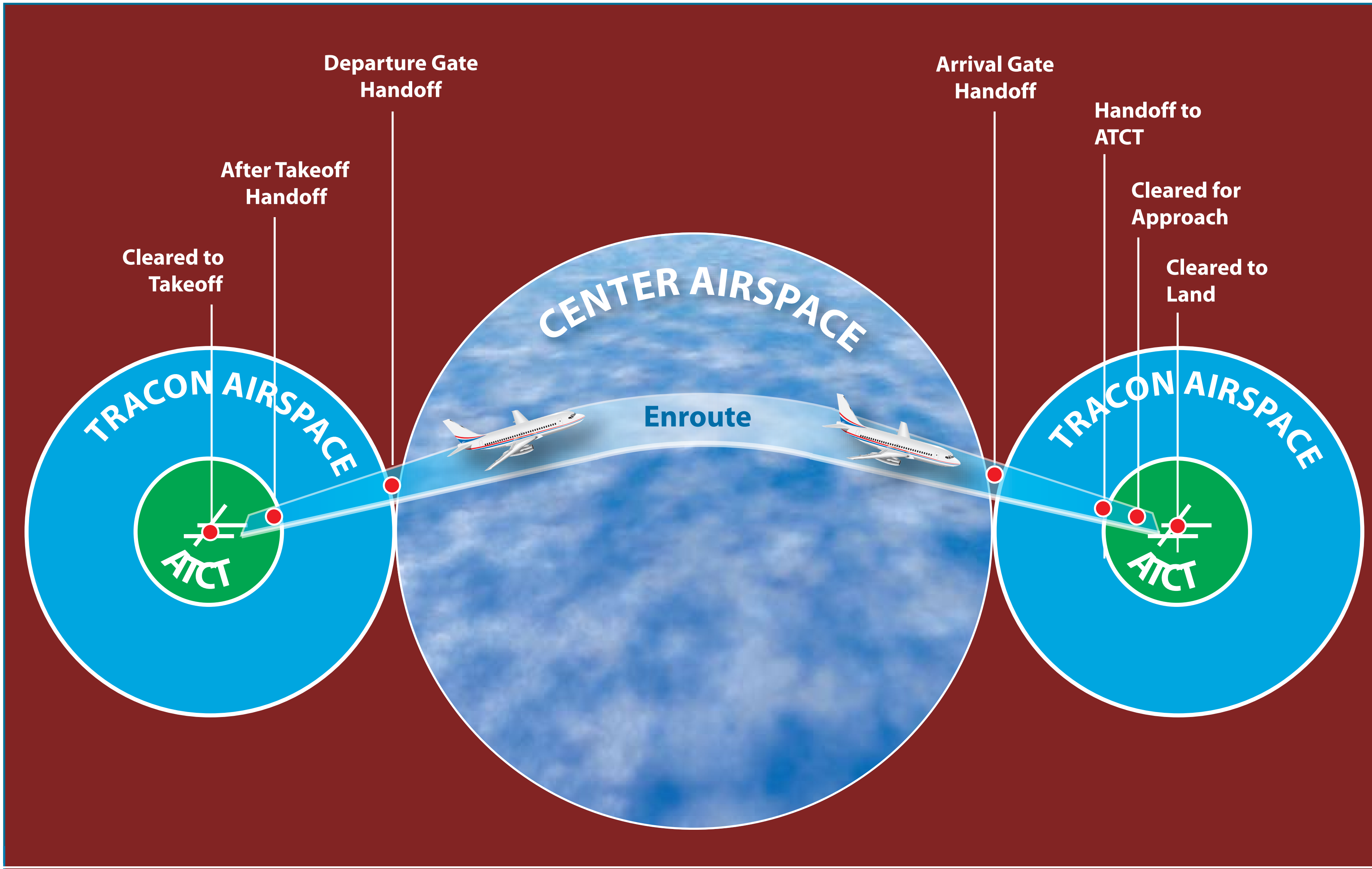
ATC is responsible for management of aircraft to ensure safety by separating aircraft and expediting the flow of traffic operating in the system. ATC maintains aircraft separation by directing aircraft by means of specific route, altitude, and/or airspeed directions.

ATC requirements and airspace management concepts are technical and complex. In the MASE Airspace Redesign Environmental Study Area there are multiple interdependencies between aircraft using CLE and DTW, as well as with operations at the satellite airports. ATC personnel function as a team and use specific procedures designed for the safe, orderly, and expeditious flow of traffic.

As shown in **Figure 1-3**, the ATC system is composed of three different types of facilities, with different purposes as described in the following sections. Management responsibility for an IFR aircraft is transferred from facility to facility as an aircraft travels from its point of origin until it reaches its destination. Note that all air carrier aircraft are required to operate under IFR regardless of weather conditions.

Air Route Traffic Control Centers

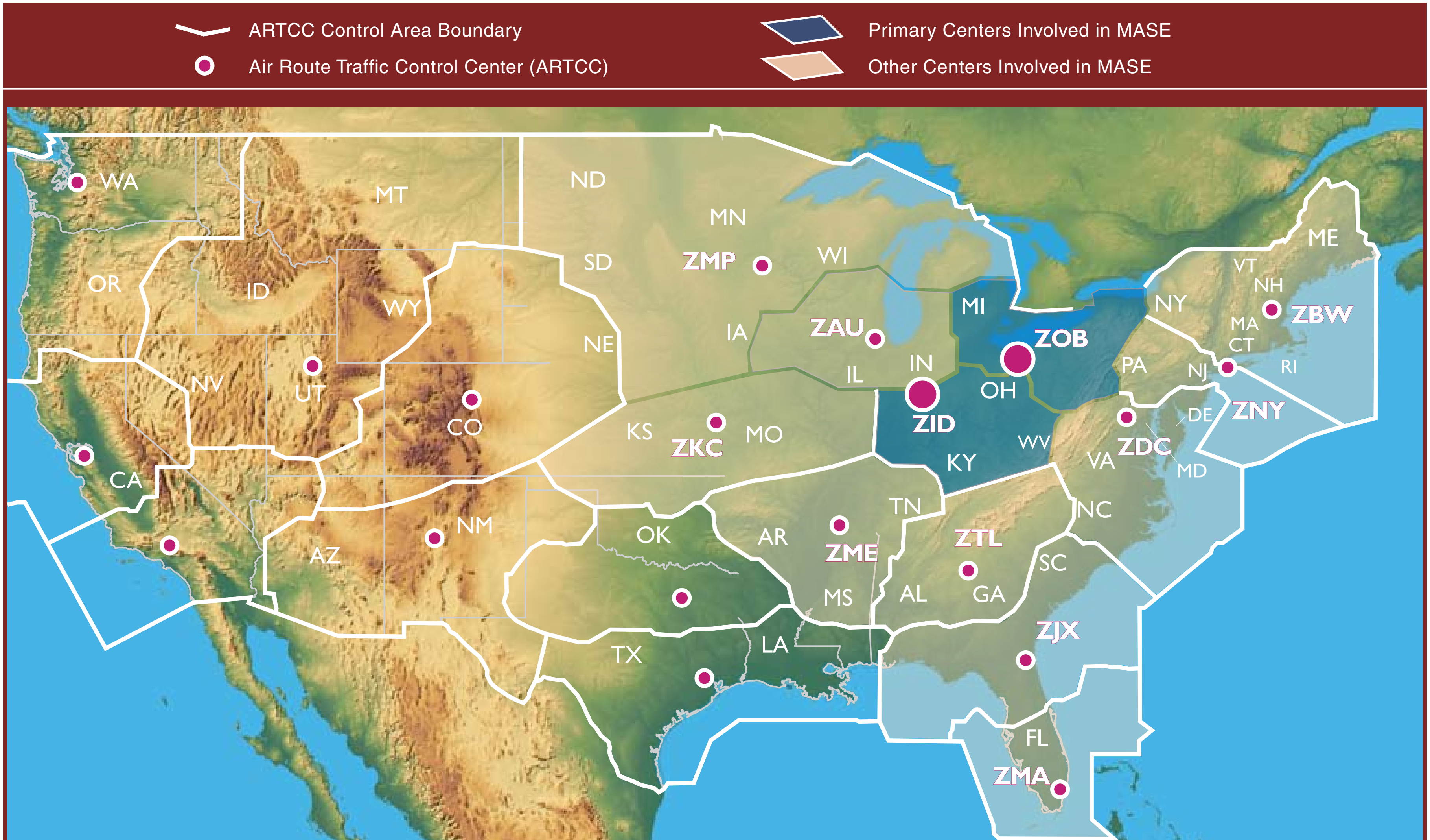
A total of 20 Air Route Traffic Control Centers (ARTCC), commonly called "Centers" exist throughout the United States, as shown in **Figure 1-4**. The centers are primarily responsible for management of



Typical ATC Management of an Aircraft Flight

Figure 1-3

MIDWEST AIRSPACE ENHANCEMENT ENVIRONMENTAL ASSESSMENT



Air Route Traffic Control Center Airspace

Figure 1-4

IFR aircraft during the high-altitude, en route phase of flight. Center controllers use radar to identify and track aircraft, and assign aircraft specific routes and altitudes via radio communication to maintain separation and orderly traffic flow. Centers divide their airspace into sectors (i.e., a portion of airspace having defined geographic and altitude boundaries) and assign a controller or team of controllers to manage the safe, orderly, and expeditious flow of traffic within that sector. Each sector has its own discrete radio frequencies. As aircraft travel through a center, management responsibility is transferred from sector to sector.

Table 1-3 provides information on the primary centers within the MASE Airspace Redesign Environmental Study Area: Cleveland Center (ZOB) and Indianapolis Center (ZID).

Terminal Radar Approach Control

Centers delegate airspace areas in the vicinity of an airport to a TRACON facility. TRACON facilities are responsible for aircraft operating in the general vicinity of one or more airports. TRACONs generally manage air traffic during a flight's arrival or departure phase, when the aircraft is within approximately 50 miles of the airport. TRACONs also divide their airspace into sectors, each having its own discrete radio frequency, and have short-range radar to identify and track aircraft. Traffic separation is accomplished through assignment of specific routes and altitudes.

Table 1-4 provides information on the primary TRACONs within the MASE Airspace Redesign Environmental Study Area.

Table 1-3

Air Route Traffic Control Centers in the MASE Airspace Redesign Environmental Study Area

Center	**Cleveland Center**	**Indianapolis Center**
Identifier	ZOB	ZID
Location	Oberlin, Ohio	Indianapolis, Indiana
Airspace Managed	Manages aircraft entering, exiting, and overflying the lower eastern portion of the Great Lakes region: approximately 70,000 square miles of domestic airspace covering western New York and Pennsylvania, northern West Virginia, the northern half of Ohio and the southeast portion of Michigan.[11]	Manages aircraft entering, exiting, and overflying the Ohio Valley area centered on the Ohio River: approximately 74,000 square miles of airspace, covering southwestern West Virginia, southern Ohio, the eastern three-quarters of Kentucky and southern Indiana.
2004 Annual IFR Operations	Managed 3.1 million aircraft operations, an increase in traffic levels over 7.5% since 1997. Ranked as the busiest Center in the United States.[12]	Managed 2.8 million aircraft operations, representing an increase in traffic levels over 21.3% since 1997. Ranked 5th among the busiest Centers .

Sources: As referenced.

Table 1-4

Terminal Radar Approach Controls in the MASE Airspace Redesign Environmental Study Area

TRACON	Cleveland	Detroit	Akron/ Canton	Mansfield	Toledo	Flint/Bishop
Identifier	CLE	D21	CAK	MFD	TOL	FNT
Location	Southwest Cuyahoga County, Ohio	South-central Wayne County, Michigan	Southeast Summit County, Ohio	Central Richland County, Ohio	Northwest Lucas County, Ohio	Genesee County, Michigan
Airspace Managed	50 NM circumference, centered about the CLE airport up to an altitude of 12,000 feet MSL	40 NM circumference, centered about DTW airport up to an altitude of 13,000 feet MSL	35 NM circumference, centered about the CAK airport up to an altitude of 8,000 feet MSL	35 NM circumference, centered about MFD airport up to an altitude of 8,000 feet MSL	40 NM circumference, centered about the TOL airport up to an altitude of 10,000 feet MSL	35 NM circumference, centered about the FNT airport up to an altitude of 10,000 feet MSL
Satellite Airports	5; major satellites include BLK and CGF.	5; all are major satellites including YIP, ARB, CYQG, DET, and PTK.	6	9	14	4
2004 Annual IFR Operations	352,915	695,430	133,188	46,891	157,183	95,137

Sources: FAA, Air Traffic Activity Data System (ATADS)

Airport Traffic Control Towers

Airport Traffic Control Towers (ATCT) manage airborne aircraft that are within a few miles of the airport and aircraft that are on the ground. Primarily, ATCTs use sight to identify and track aircraft. They sequence arriving and departing aircraft on the runways. ATCTs direct aircraft as they taxi to and from runways and authorize aircraft to land or takeoff.

As shown in **Tables 1-1 and 1-2**, 14 of the primary and secondary airports in the MASE Airspace Redesign Environmental Study Area have operating ATCTs, including: Cleveland Hopkins International Airport (CLE); Detroit Metropolitan Wayne County Airport (DTW); Akron-Canton Regional Airport (CAK); Ann Arbor Municipal Airport (ARB); Bishop International Airport (FNT); Burke Lakefront Airport (BLK); Cuyahoga County Airport (CGF); Detroit City Airport (DET); Mansfield Lahm Regional Airport (MFD); Oakland County International Airport (PTK); Selfridge Air Force Base (MTC); Toledo Express Airport (TOL); Willow Run

Airport (YIP); and Windsor Airport, Ontario, Canada (CYQG).

Generally, ATCT airspace extends to a radius of four nautical miles from the airport to an altitude of 3,000 feet above the surface.

The only airport being modeled in this EA that does not have an ATCT is Oakland/Troy Airport (VLL). However, Oakland/Troy Airport does have more than 10 daily IFR operations, and so it is included in the modeling as discussed in Section 1.2.3.

1.2.2 Perspectives on Airspace Redesign

The following two sections provide national and local perspectives on the proposed MASE airspace redesign.

1.2.2.1 National Perspective

Major metropolitan areas have experienced increased air traffic demand resulting from influences such as population growth and the use of regional jets. As a result, the NAS is currently experiencing deficiencies that are evident to both users (e.g., the public, commercial airlines, general aviation, and the military) and FAA. Deficiencies materialize in the form of delays, lengthier routings, complex ATC procedures, and airspace saturation. While today's ATC system provides a high level of safety, growth in air traffic volume has resulted in increased delays in order to maintain safe separation and movement of aircraft. Additionally, the existing system was not designed to accommodate the use of advanced navigation systems (e.g., satellite navigation systems such as Global Positioning System (GPS)). Consequently, NAS users incur costs associated with existing ground based navigational facility inefficiencies during periods of high traffic volume. Due to the existing constraints in the NAS (a system that is still primarily designed around ground-based navigation aids) users cannot reduce their operational costs by flying routes they prefer.

Nationwide, airspace management has become increasingly complex and more challenging as aircraft technological advances continue and air traffic activity grows. To maintain safety and efficiency, the FAA, airlines, and airport operators have worked to keep pace with these challenges through advances in ATC technology, airline efficiencies, and airport improvements. Nonetheless, inefficiencies continue to occur and will increase as traffic levels rise unless further improvements are made.

The FAA has implemented a system-wide strategy for the advancement of the NAS over the next ten years, called the Operational Evolution Plan (OEP). The OEP includes both optimization of the airspace through the National Airspace Redesign (NAR) program and the introduction of new concepts, technologies, and procedures. The goals of the NAR program are:

1. Improve the flows into and out of all of the nation's major airports;

2. Increase system flexibility, predictability, and access;

3. Maintain and improve system safety;

4. Improve efficiency and reduce delays; and

5. Support an airspace system that takes advantage of emerging technologies.

The MASE project is one in a number of FAA initiatives to redesign airspace across the United States. This initiative fulfills the FAA's primary statutory mission to assure safe and efficient use of the navigable airspace under the Federal Aviation Act of 1958.[13] In addition to the MASE airspace redesign, numerous proposals for airspace redesign have begun in the NAS.

1.2.2.2 Regional and Local Perspectives

The airspace included in the MASE project is some of the busiest in the United States. The area is a major hub for national and international civilian and military air traffic. Geographically located in the lower Great Lakes region in what is typically described as the Midwest area of the United States, it serves as one of the primary regions for the management of over-flight air traffic to and from the east coast, west coast, Chicago, and the upper Midwest.

In 2001, the FAA's Great Lakes Region, which includes a portion of the area encompassing the MASE project, accounted for 24% of the total nationwide en route operations and 49% of en route delays.[14] This significant delay level is due to a combination of three factors:

- The proximity and location of major hub airports such as Chicago-O'Hare, Cincinnati/Northern Kentucky, CLE, DTW, Minneapolis, and Pittsburgh International Airports within the area;
- The high volume of traffic from the major hubs of the east and west coasts which must pass through the region's en route airspace on intercontinental routes, due to the region's central location.
- The increasing growth of aircraft operations to and from the region to southern destinations, such as Florida.

The addition of the north/south flights have added to the complexity of the overall terminal and en route airspace structure, which was already complex due to the number of busy airports and the high volume of aircraft on east/west high-altitude routes within the both the MASE High-Altitude Airspace Redesign Study Area and the MASE Airspace Redesign Environmental Study Area.

Inefficiencies in this airspace can adversely affect major portions of the NAS. Congestion in the en route airspace can impact terminal airspace operations and create delays in both the en route and terminal ATC systems. Just the proximity of CLE and DTW to each other, along with the numerous other satellite airports in the MASE Airspace Redesign Environmental Study Area and the associated volume of operations, makes this portion of the region's airspace an essential component in the overall operational efficiency of the NAS.

As initially mentioned in this chapter, the high-altitude en route airspace (i.e., Center) changes in the MASE design are a result of the need to reduce congestion in high-altitude airspace generally east of the Mississippi River. This congestion arises when complex air traffic flows are combined with high traffic volume that has the potential to create delays.

High complexity in an airspace flow results from a number of factors including:

- Transitioning traffic between ATC sector boundaries; between various altitudes and their associated flows;
- Handling multiple over-flight flows where various aircraft must be moved vertically between these flows; and
- Vectoring aircraft to handle ATC miles-in-trail requirements that are established

as capacity buffers to allow for handling air traffic demand in congested airspace.

Congested airspace makes it difficult for the high-altitude en route centers to provide efficient route sequencing and will cause these centers to hold arrivals to busy airports when the need arises to maintain safety and to some extent, efficiency. Some of this efficiency is related to users being delayed prior to departure, when it is sometimes better to have the delay apportioned on the ground where fuel is being saved and airspace congestion is effectively reduced.

Another effect of this airspace congestion is that users are often negatively impacted when in the air by airborne reroutes that usually occur dynamically through radar vectoring (i.e., flying various compass headings) that adds miles to the total route flown, but is intended to mitigate congestion while maintaining safety. As traffic volume continues to increase congestion will only worsen in the existing airspace structure.

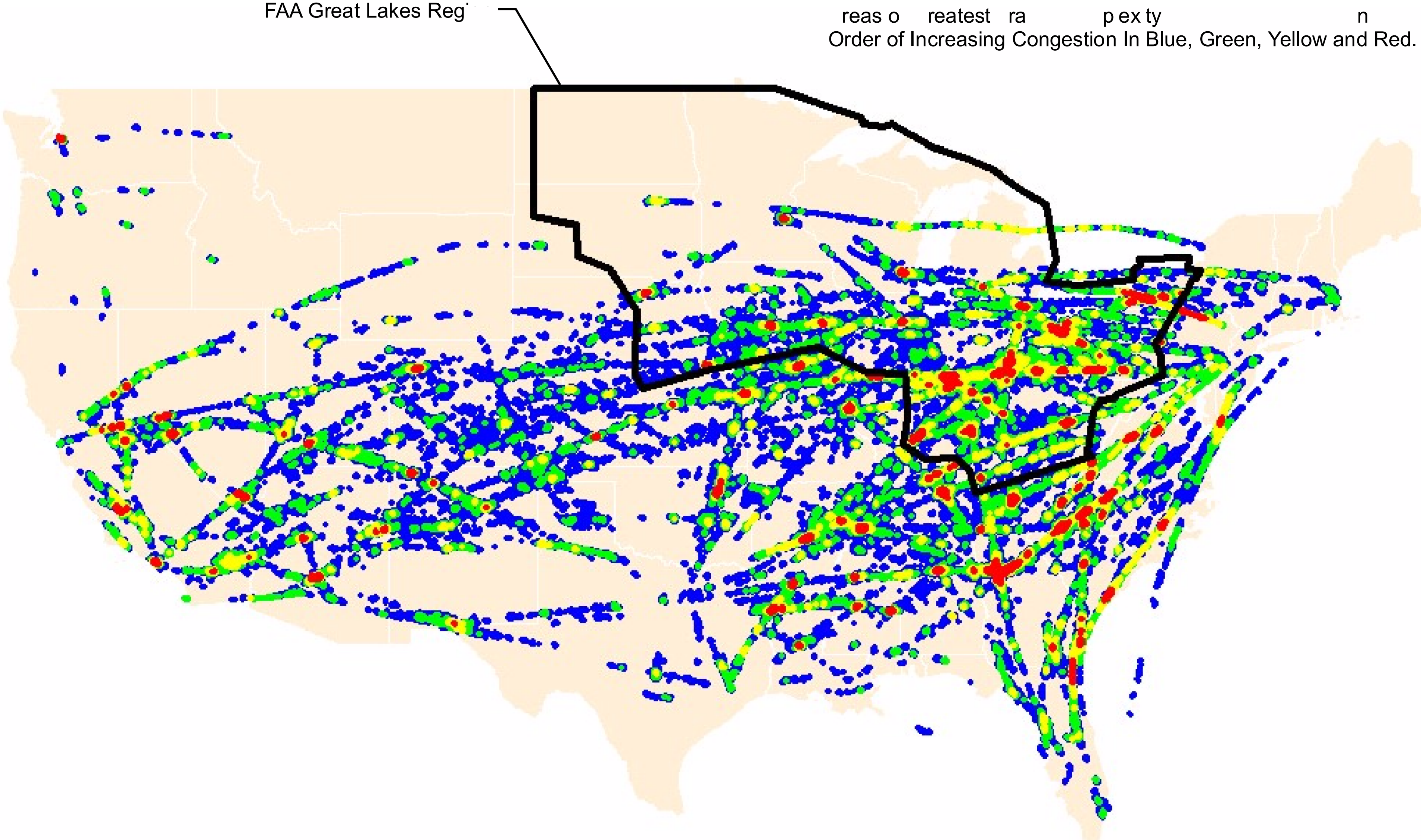
Figure 1-5 is a depiction of congestion in the NAS, at or above 27,000 feet MSL (i.e., Flight Level 270). Note that the preponderance of this congestion is concentrated in MASE airspace roughly shaped in a triangular area bounded by Minneapolis (MSP) in the upper Midwest, Boston (BOS) in the east, and as far south as Miami (MIA) terminal airspace.

Airspace congestion has serious consequences for ATC facilities in the Midwest and beyond, including CLE and DTW/D21 as well as facilities serving the Cincinnati (CVG), Chicago O'Hare (ORD), Chicago Midway (MDW) and Minneapolis/St. Paul (MSP) airports. Many of these terminal airspace environments are constrained by departure miles-in-trail restrictions that are required to manage the volume of traffic. Many facilities also apply altitude restrictions to further manage complex traffic flows. Ground stops are initiated on a regular basis due to high-altitude en route airspace saturation; this can result in departure delays for several hours after a ground stop event has ended. In particular, ground stops due to airspace saturation can be confusing for the traveling public, since there may be good weather at the departure airport and seemingly few obvious airport surface delays. However, the ground stop is based on the need to meter access from the terminal airspace into the overlying en route traffic flow that is heavily congested.

From a "big picture" perspective, MASE is intended to address high-altitude en route congestion and flow problems between the terminal airspace environments in the Midwest, focusing on CLE and D21, as well as addressing ZOB and ZID airspace optimization. In addition, MASE addresses constraints between the terminal and high-altitude airspace environments in the Midwest and the following airspace facilities:

- West towards Kansas City Center (ZKC) and Saint Louis TRACON (T75).
- South towards Atlanta Center (ZTL) and Atlanta TRACON (A80).
- South towards Jacksonville Center (ZJX) and Jacksonville TRACON (JAX).
- East towards Washington Center (ZDC) and Potomac TRACON (PCT).
- East towards New York Center (ZNY) and New York TRACON (N90).
- East Northeast towards Boston Center and Boston TRACON (A90).

Midwest Airspace Enhancement EA
Figure 1-5 : Congestion in the NAS at or Above 27,000 Feet



Order of Increasing Congestion In Blue, Green, Yellow and Red.

Source: FAA Great Lakes Region, Integrated Development Plan, January 2003

These high-altitude multi-center routing design changes would also address inefficiencies in existing routing that have materialized from natural and evolutionary market demand changes to traffic flows between various city pairs.

The MASE project includes changes in the area of airspace known as the Sandusky Basin, which is the airspace below an altitude of 8,000 feet MSL between Cleveland and Detroit that is primarily over Lake Erie. Today, the Sandusky Basin airspace is used for approach control services for Sandusky, Port Clinton, Pelee Island, and all other western basin islands in Lake Erie. This airspace is also used for the management of general aviation aircraft flying through the airspace and all propeller aircraft inbound to DTW and Detroit satellite airports (e.g., ARB, PTK, YIP, etc.).

With the MASE project, the Sandusky Basin airspace would be used to establish a second southeast arrival flow into D21 airspace in order to accommodate the increasing volume of traffic from the south, mostly from Florida. Moving this southern arrival traffic from the south to the southeast would permit the establishment of another departure route in the south airspace corridor and thus reduce departure restrictions out of DTW. In addition, when coupled with the proposed arrival and departure changes for CLE TRACON on its south and southwest airspace periphery, the proposed changes to the Sandusky Basin airspace with the MASE project would allow for better use of high-altitude en route airspace within ZOB and ZID.

Overall, providing additional arrival and departure routes for both the CLE and D21 terminal airspace environments with the overlying en route flows of ZOB and ZID would reduce congestion and delay. An added systemic airspace benefit is that with the MASE airspace route additions and realignments, high-altitude en route traffic between New York and Chicago and other flows to/from the upper Midwest would be greatly enhanced through reduced congestion and delay.

The portions of the high-altitude MASE multi-center reroutes that are proximate to CLE and D21 (as well as applicable portions of ZOB and ZID low-altitude en route airspace) in the MASE Airspace Redesign Environmental Study Area have been evaluated for potential noise impacts. This noise analysis includes existing and new runway configurations at both CLE (i.e., CLE 06R/24L extension in 2006) and DTW, as well as the TRACON/Center traffic flows that were developed for these two airports and their associated terminal and low-altitude en route airspace. Existing and intended future ATC procedures were used to develop the applicable noise models based on guidance and review from ATC personnel at the CLE and DTW ATCT, CLE and D21 TRACONs, and ZOB Center. As discussed previously, aircraft route changes outside the MASE Airspace Redesign Environmental Study Area and above 10,000 AGL were not been analyzed for noise impacts as per FAA Order 1050.1E.[15]

1.2.3 MASE Airspace Redesign Environmental Study Area Airports

There are a total of 98 public use airports located within the MASE Airspace Redesign Environmental Study Area. However, not all of these airports are included in the operational modeling and noise analysis for this EA. The decision to include or exclude airports was based on the fact that the proposed airspace redesign applies to IFR aircraft operations. Airports without a significant amount of IFR traffic were not modeled because there would be little or no change to their operations as a result of the MASE airspace redesign; these airports are managed by ATC on an as needed basis.

For the purposes of this EA, airports with less than 10 IFR operations per day based on a 77-day sampling of current radar data were not considered to have a significant amount of IFR operations. Therefore, airports with less than 10 IFR operations per day were not modeled in this study because operations at these airports would not be affected by the MASE airspace redesign.

Within the MASE Airspace Redesign Environmental Study Area, 15 airports have an average of 10 or more daily IFR operations. Additionally, Selfridge Air National Guard Base (MTC) was included because, although it averaged only nine operations a day, many of the operations at MTC are military tactical fighter jet aircraft and large four-engine turboprop aircraft. Operations at Mansfield Lahm Airport (MFD) also fell below the 10 operations a day criteria during the 77-day radar period, but historic radar data suggests that operations at MFD fluctuate over the course of the year and, on an annual basis, average out to nearly 10 IFR operations per day. For this reason, coupled with the fact that approximately half of the operations at MFD are jets and that MFD has a TRACON, MFD was included in the study.

Traffic flows from the 15 primary and secondary airports in the Cleveland and Detroit Metropolitan areas are interrelated. The numerous public and private airports in the MASE Airspace Redesign Environmental Study Area also add to the complexity of traffic flows. **Figure 1-2** shows the 15 airports evaluated in this EA, while Section 3.1.2 provides additional information on each airport.

1.2.4 Aviation Demand

The level of IFR aviation activity expected throughout the planning period is an important consideration in the EA process. The purpose of the IFR forecast is to provide data input for the operational and environmental effects analysis for both existing conditions as well as future, projected levels of operations.

The forecast of IFR traffic at the 15 MASE Airspace Redesign Environmental Study Area airports are considerably more detailed than those found in the FAA's Terminal Area Forecast (TAF). The FAA's TAF provides only total IFR operations at a facility. Additional information is required to appropriately model the airspace and noise, including information on aircraft type, origin/destination, and flight schedules. Overflights within the MASE Airspace Redesign Environmental Study Area airspace are also forecasted for modeling purposes.

Primary data sources for the IFR forecast include the FAA's TAF, FAA Aerospace Forecast 2004-2015, and future aircraft orders. The FAA's TAF was the primary source for overall operations growth. Detailed information on the forecast methodology and assumptions is contained in **Appendix D.**

Several evolving trends are evident in the IFR traffic forecast. The corporate aviation market is expected to grow at a more robust rate than scheduled airline service, given the success of fractional ownership programs for corporate jet aircraft. Among the most pronounced changes in commercial passenger fleets in recent years has been the replacement of turboprop aircraft with regional jets. The continued growth in regional jet use is expected to drive an increase in the average seating configuration of regional airline markets.

In particular, the increased use of regional jets is an important factor that is affecting the volume and flow of air traffic. The use of smaller aircraft changes the number of operations required to provide the same level of passenger service (i.e., available seats). Unlike the propeller aircraft that many regional jets are replacing, the smaller regional jets use the same traffic flows and runways as larger commercial service jets; accordingly, this change in fleet mix restricts the options available to ATC and adds to the complexity of air traffic management within the MASE Airspace Redesign Environmental Study Area.

Table 1-5 shows the total operations for the 15 study airports for the base year (2004), the airspace redesign implementation year (2006) and a future year (2011).

1.3 PURPOSE AND NEED

The identification of the Proposed Action's purpose and need is the primary foundation for the identification of reasonable alternatives to the Action and the evaluation of the environmental effects of the alternatives in an EA.

Table 1-5

Total Annual IFR Operations for Noise Modeling

Airport	Identifier	2004	2006	2011
Cleveland Hopkins International Airport	CLE	259,953	267,945	287,962
Detroit Metropolitan Wayne County Airport	DTW	521,914	567,691	644,935
Burke Lakefront Airport	BKL	23,418	24,269	26,396
Cuyahoga County Airport	CGF	19,856	20,141	20,855
Akron/Canton Regional Airport	CAK	77,855	79,799	84,297
Mansfield Lahm Regional Airport	MFD	17,213	17,369	17,760
Willow Run Airport	YIP	47,406	47,849	48,955
Ann Arbor Municipal Airport	ARB	4,161	4,294	4,628
Windsor Airport (Ontario, Canada)	CYQG	14,045	15,142	16,832
Detroit City Airport	DET	17,922	18,005	18,213
Oakland/Troy Airport	VLL	4,380	4,380	4,380
Oakland County International Airport	PTK	61,393	62,406	64,938
Selfridge Air National Guard Base	MTC	16,425	16,425	16,425
Toledo Express Airport	TOL	59,386	59,399	60,164
Bishop International Airport	FNT	56,648	58,325	61,421
Overflights	-	67,770	70,984	76,623
Total		1,269,745	1,334,423	1,454,784

Source: HNTB Analysis, 2005.

The FAA's first consideration and highest priority in evaluating the Purpose and Need for any Proposed Action, is to serve the public interest by exercising its authority to assign, maintain, and enhance the safety and security of the national airspace.[16]

1.3.1 Purpose

Despite advances in aircraft and ATC technology and increases in the number and types of aircraft using the airspace, the basic structure of the MASE airspace has remained essentially the same for many years. As described in Section 1.2.2.2, the current airspace structure is inefficient.

The purpose of the proposed Federal action analyzed in this EA is to develop and implement new en route and terminal airspace procedures that would address the Need discussed in Section 1.3.2 by increasing the efficiency and enhancing the safety of aircraft movements in the airspace overlying and beyond the Cleveland and Detroit Metropolitan areas. The proposed timeframe for implementing the action is 2006. The MASE airspace redesign would integrate high-altitude en route airspace changes with the low-altitude terminal airspace changes to provide an overall more seamless operation between TRACON and Center airspace. In addition, the MASE project would allow for more efficient utilization of the runway configurations at DTW and CLE by allowing for improved integration of traffic flows with ZOB and ZID. Overall, the MASE project would maintain safety while reducing delays, accommodating growth, and incorporating new technology.

1.3.2 Need

Federal action is needed to maintain safety, mitigate delay, and accommodate growth in the airspace overlying and beyond the Cleveland and Detroit Metropolitan areas.

1.3.2.1 Maintain Safety

As previously stated, FAA has a responsibility under the Federal Aviation Act of 1958 to manage the use of navigable airspace in the interest of safety. The need to maintain safety in consideration of growing aircraft operations is a requirement for Federal action. By taking advantage of new navigation/landing (e.g., GPS) and recently fielded ATC technologies (e.g., Precision Runway Monitoring (PRM)) and procedures (e.g., Simultaneous Offset Instrument Approach (SOIA)), the project would improve overall air traffic flows to fully use these capabilities. More predictable flows and better integration of standardized procedures would result in decreased controller workload and simplified operations for pilots, thus maintaining safety in one of the busiest air traffic areas in the world.

1.3.2.2 Mitigate Delay through the Reduction of Congestion

The current airspace design, which is based on the interaction of separate TRACON facilities and several overlying centers, cannot efficiently handle the level of traffic within the Cleveland and Detroit Metropolitan areas. In the 1999-2000 timeframe it became clear that the increased demand for air service in the metropolitan areas would result in unacceptable congestion and delays to users (e.g., airlines, flying public, etc.). In response to increased demand, the Great Lakes Region of the FAA initiated the MASE project to mitigate delays and their impacts.

Prior to September 11, 2001, airline delays were receiving increasing attention in local and national news media as the public reacted to the inconvenience and time lost because of these delays. The frustration of passengers experiencing late arrivals, missed connections, and cancelled flights prompted the airline industry and the federal government to search for ways to reduce delays. The public demanded more stable and predictable conditions that would ensure reasonable expectations of on-time flights. This demand came at the same time that the public dramatically increased its use of aviation as a mode of travel.

While the terrorist attacks of September 11, 2001, and the Iraqi War temporarily reduced nationwide air traffic operations, recently air traffic has begun to rebound to near pre-September 11th levels in certain areas. According to the FAA Aerospace Forecasts, commercial aviation demand and activity at all FAA facilities are expected to return to pre-September 11th levels by the 2005-2006 planning timeframe. As traffic levels increase, delays will also increase as congestion in en route and terminal airspace increases.

Table 1-6 shows 2004 annual delay statistics for the primary airports in the MASE Airspace Redesign Environmental Study Area. In 2004, about 0.5% of flights at CLE were delayed for an average of nearly 49 minutes each. At DTW, about 1.25% of flights were delayed for nearly 35 minutes each. While weather was the primary contributor to delays at both CLE and DTW, terminal airspace volume was also a significant contributor to the delays according to FAA data.[17] With forecasted air traffic operations expected to grow, these delays are expected to increase as congestion in the en route to terminal airspace interface becomes more pronounced. Delays do not increase at a constant rate with operations; rather, delays tend to increase exponentially. A steady increase in operations will continue to strain the existing airspace design because the fixed number of available routes limits the capability to merge aircraft into and out of the overlying airspace flows.

Parts of the current airspace were most recently changed in the early 1990s when new runways were built and ATC procedures were updated at DTW. In 2004 the CLE and D21 TRACONs managed approximately 352,915 and 695,430 annual instrument operations, respectively.[18] By the year 2011, this volume is projected to increase to 425,442 and 857,507 annual instrument operations for the CLE and D21 TRACONs, respectively.[19]

With the projected increases in the volume of air traffic, continued use of the current airspace design and its inefficient routes will result in excessive user delay due to en route and terminal airspace congestion.

1.3.2.3 Accommodate Growth

Federal action must accommodate growth. As discussed in Section 1.2.4 and shown in **Table 1-5**, the aviation demand forecast prepared for this EA estimates that IFR operations at the 15 primary and secondary airports, including overflights through TRACON airspace, will grow from about 1.27 million total IFR operations in 2004 to over 1.45 million operations in 2011, an increase of about 14.6%. If no changes are made to the existing airspace (and its limited structure for accepting and delivering aircraft to and from the overlying airspace flows in times of peak demand), delays would be expected to increase during busy time periods. New ingress and egress fixes and routes for both the CLE and D21 TRACON airspace areas would allow for a smoother transition into and out of the ZOB and ZID overlying flows. Therefore, not only could the airspace redesign

Table 1-6

2004 Annual Delay at Primary Airports

Airport	Total Delayed Operations	Percent Operations Delayed	Average Length of Delay (minutes)	Total Delay Time (minutes)
Cleveland Hopkins International Airport (CLE)	1,352	0.51%	48.9	66,078
Detroit Metropolitan Wayne County Airport (DTW)	6,548	1.25%	34.6	226,596

Note: A reportable delay is defined in FAA Order 7210.55B as, "Delays to IFR traffic of 15 minutes or more, experienced by individual flights, which result from the ATC system detaining an aircraft at the gate, short of the runway, on the runway, on a taxiway, and/or in a holding configuration anywhere en route..."

Source: FAA OPSNET

accommodate a greater level of traffic, but it would provide for taking advantage of the existing CLE and DTW runway capacity afforded by the recent runway construction projects.

1.4 PROPOSED ACTION DEVELOPMENT DESCRIPTION

The Proposed Action for this EA is to reconfigure the airspace system in the in the Cleveland and Detroit Metropolitan areas in accordance with the MASE airspace redesign. This involves changes to ingress and egress routes and fixes, altitude use, holding patterns, as well as development of new procedures in both the high-altitude multi-center en route and the low-altitude terminal airspace environments.

To develop the Proposed Action, ATC specialists with in-depth knowledge of regional and national air traffic issues evaluated the proposed airspace reconfiguration and ATC procedures, as well as the interaction of regional air traffic with other traffic in the NAS. In designing MASE, the airspace designers considered use of the highest reasonable altitudes and the most direct routing when possible. Use of high-altitudes provides more flexibility, thereby enhancing safety, and provides greater economic benefits to aircraft operators as aircraft engines are more efficient and use less fuel at high-altitudes.

The MASE airspace design team was comprised of controllers from the Cleveland ATCT and TRACON, the Detroit ATCT and TRACON, and the Cleveland Center (ZOB). In addition, coordination was effected between these core MASE design team members and members from surrounding and associated en route facilities like Chicago Center (ZAU), New York Center (ZNY), Boston Center (ZBW), Washington Center (ZDC), Indianapolis Center (ZID), Memphis Center (ZME), Minneapolis Center (ZMP), Kansas City Center (ZKC), Atlanta Center (ZTL) and NAV CANADA. The airspace design team developed the MASE Alternative after numerous design iterations via coordination with the affected ATC facilities. MASE's high altitude en route airspace structure was developed through a collaborative effort between numerous FAA regions and RTCA, Inc. to more efficiently transition aircraft to and from major airports east of the Mississippi River.

The MASE airspace changes at ZOB and ZID (which are needed to support the CLE and D21/DTW terminal airspace changes for the new runway configurations at CLE and DTW) would create a ripple effect upon other high altitude routes in adjacent Centers. Thus, numerous high altitude multi-center re-routes are necessary to make the overall plan work. This interdependence in the routing structure is a common characteristic of the busy airspace that is encompassed by the Chicago, New York, and Atlanta areas. Routing interdependencies also extend to the airspace structure at adjacent Centers.

1.5 PROPOSED FEDERAL ACTION

The Proposed Federal action is the reconfiguration of the airspace system in the Cleveland and Detroit Metropolitan areas, as well as the streamlining of high-altitude multi-center reroutes to more efficiently manage IFR aircraft, in accordance with the proposed MASE project. This consists of the design, development, implementation, and use of new or modified ATC procedures and reconfigured airspace.

The Proposed Action does not include any physical changes, development of facilities, or require local or state actions. No physical alteration to any environmental resource would occur in either the MASE High-Altitude Airspace Redesign Study Area or the MASE Airspace Redesign Environmental Study Area. Additionally, the Proposed Action would not require changes to any Airport Layout Plan.

1.6 IMPLEMENTATION

The various components of MASE are expected to be implemented in phases beginning in 2006. Implementation of the Proposed Action could require revisions to Letters of Agreement and Facility Orders for all ATCT, TRACON and ARTCC facilities affected by the MASE. Letters of Agreement are formulated when operational and procedural needs require the cooperation and concurrence of more than one ATC facility. Letters of Agreement typically delegate airspace and responsibilities, specify ATC procedures, and standardize operating methods. Individual ATC facilities may also set forth policies and procedures through a local Facility Order.

Implementation of MASE would require the FAA to establish new ATC procedures and revoke or modify existing procedures that would be inconsistent with the new procedures. Establishing or changing ATC procedures includes training of air traffic controllers and publication of the procedures.

1.7 SUMMARY

In summary, the Proposed Action would address the Purpose and Need for Federal action as follows:

- Implementation of new en route and terminal airspace procedures that would increase the efficiency and enhance the safety of aircraft movements in the airspace overlying and beyond the Cleveland and Detroit Metropolitan areas, as well as in the high-altitude stratum.

- Implementation of new routes in the en route airspace managed by ZOB and

ZID, as well as peripheral centers (i.e., Chicago Center (ZAU), New York Center (ZNY), Boston Center (ZBW), Washington Center (ZDC), Memphis Center (ZME), Minneapolis Center (ZMP), Kansas City Center (ZKC), Atlanta Center (ZTL), Jacksonville Center (ZJX)), would mitigate delay and decrease flying distances between certain cities. These multi-center high-altitude reroutes are identified in **Appendix C**.

- Implementation of new ingress and egress fixes and routes in the CLE and D21 TRACON airspace would provide for seamless integration with the high-altitude route changes in the airspace managed by ZOB and ZID Centers, as well as reduce congestion and delays for New York and Chicago overflights passing through this airspace. In addition, the proposed TRACON procedures would provide for optimum use of the new runways at CLE and DTW because restructuring of the terminal and overlying en route airspace flows allows for better use of the existing airport capabilities.

- Collectively, the MASE airspace redesign changes would incorporate new navigation (e.g., GPS) and ATC technologies (i.e., PRM) and procedures (i.e., SOIA) that would increase the efficiency and reliability of the ATC system.

The Proposed Action is needed to reduce congestion, maintain safety, mitigate delays, and accommodate growth.

NOTES

1 32 USC 3321 et. seq.

2 49 USC 40101 (d)(4).

3 FAA Order 1050.1E, "Environmental Impacts: Policies and Procedures;" Effective Date June 8, 2004; Appendix A, pp. A-64, Paragraph 14.5e.

4 FAA Order 1050.1E, Sections 303, 311; FAA Air Traffic Noise Screen Policy, 65 FR 76339 (1999).

5 Ibid.

6 FAA Order 1050.1E, "Environmental Impacts: Policies and Procedures;" Effective Date June 8, 2004; Appendix A, pp. A-64, Paragraph 14.5e.

7 Ibid.

8 Ibid.

9 49 USC 40101 et. seq.

10 Ibid.

11 Cleveland ARTCC Home Page, www.faa.gov/ATS/aglzob/zobartcc.

12 Federal Aviation Administration, Administrator's Fact Book, March 2005, www.atctraining.faa.gov/site/factbooks/.

13 49 USC 40103.

14 Great Lakes Region Integrated Design Plan for the National Airspace Redesign, January 2003; Section 2 – Problem Description, pp. 5.

15 FAA Order 1050.1E, "Environmental Impacts: Policies and Procedures;" Effective Date June 8, 2004; Appendix A, pp. A-64, Paragraph 14.5e

16 49 USC 40101(d)(4).

17 FAA OPSNET.

18 FAA ATADS.

19 FAA TAF, May 2005.